

Iowa Power Fund Board - Due Diligence Committee (DDC)
Meeting Minutes
May 28, 2008

Iowa State Capitol, Room 116
Des Moines, IA

Call to Order

Roya Stanley, Chair, called the meeting to order at 1:16 pm

Roll Call

Member	Present	Absent
Tom Barton	X	
Franklin Codel	X	
Ted Crosbie	X	
Vern Gebhart	Conf. Call	
Patricia Higby	X	
Fred Hubbell	Conf. Call	
William (Curt) Hunter		X
Roya Stanley	X	

Also in attendance from the OEI, Governor's Office: Jennifer Wright, Michelle Bauer, Brian Crowe, Deborah Svec-Carstens (associate in general counsel, Governor's Office), Tom Wind (of the Iowa Power Fund) and Mary Lewis (Recording Secretary).

Approval of Agenda

Roya suggested to accept the agenda. Mr. Barton moved, Ms. Higby seconds that the agenda for this meeting is approved. Motion passed on voice vote.

Approval of Minutes

Minutes will be available for review at the next meeting.

Chair's Remarks

None.

Full-Application Review

1053-UNI: Development of Less Explosive Dye Sensitized Solar Cells Presentation

- Good area for students to get excited about research and to make contributions

- Different types of Solar cells
- Emerging technology – cells are easy to manufacture
- Photosensitizing dye could be developed into a less expensive product
- Industrial Partner is DISTek Integration
- Current molecule used commercially is TiO₂
- Main goal is to get students excited about science and alternative engineering research
- Need a year to build project team
- Currently have \$18,600 UNI/Luther contribution

Questions

Q. Wasn't this a three year program? A. After pre-App process, the DDC asked for it to be cut down to one year.

Q. Why create enthusiasm through this project? A. To allow students to see a practical application from their research.

Q. Where is DISTek located? A. Cedar Falls Industrial Park, Cedar Falls, Iowa.

Q. Your 1998 quote, are you aware that author is still working on this area? A. I have been researching the work and only found the 1998 quoted data.

Q. Why do a project with old data? A. We want to lengthen the linking groups and that part of the research has been neglected.

Q. Will this work or not? A. It will work.

C. Wondered why this approach is being taken as opposed to other avenues.

C. This is to support maybe 6 undergraduates research for two summers for something the size of an ipod. I don't see how this would benefit Iowa.

A. For the amount we're asking, we could really encourage students through their professional development.

C. DISTek is a good corporation partner. They help John Deere make better tractors. Microsoft or apple are looking into creating hand-held solar charged products.

C. Debate isn't about using photovoltaic cells. They're already in use. This proposal is to create a better, cheaper model. The benefit to Iowa is the education piece. Not sure if the end product would be able to support product industry growth within Iowa.

Y - Barton, Crosbie, Codell, Higby

Table -

N - Gebhart, Hubbell

Project goes to the PF Board

There is the recommendation that this proposal goes to the full board.

1059-Iowa Stored Energy Plant Agency: Iowa Stored Energy Park Presentation

RECUSAL: Vern Gebhart

- Questions about Benefits to Iowa can be better explained by Dr. Imre Gyuk
- Compressed Air Energy Storage is vital to Iowa energy industry.
- Provides energy when needed
- On a very hot day, generation systems can't cope with demand.
- Lots of technology available for storing energy but not many can handle very large amounts
- Studies in small amount of megawatts has proven that it can be accomplished
- Aggressive renewable standards are being adopted around the United States
- Mandates can only be reached when technology can keep up
- Wind ramping can be too abrupt for most utilities
- And wind doesn't peak when you need it to peak
- Storage allows for 24 hour planning for usage.
- CAES is the lowest capital costs for utilities
- Off peak could then be wind energy
- Underground aquifer system would be compressed storage unit
- 2 plants currently exist/been around for about 10-15 years
- CAES plants are a hot subject
- Iowa could be the first storage facility in the nation
- There's 2000 megawatts of wind at play in Iowa
- DOE has provided 4.5 mil so far
- found a good site called Mount Simon
- Testing has proven models work for practical use
- Dallas Center is the site location
- Water table acts as a big air bladder
- Exactly like the Redfield Gas Utility storage site
- Necessary work needed is core samples and a second test well to determine flow characteristics
- Eventually will have 13 wells
- \$3-4 mil needed

Questions

Q. Who regulates this? A. IUB, DNR & EPA would take care of underground portion.

Q. Who wants this service? A. Farmers.

Q. Do you pay the farmers the right to drill on their land? A. We'll have leases to drill Actual plant sites, we'll have to buy.

Q. Have these leases been secured? A. Yes.

Q. Are there issues of mineral rights involved? A. Mount Simon water takes a lot of treatment to make potable. Not aware of value for minerals – we just want storage rights.

Q. Is this old water? A. Yes, the aquifers are 100 million years old.

Q. This is a finite amount of water? Yes.

Q. Wind energy is on the grid-why is a storage facility beneficial? A. Storage would be on grid and would stabilize usage during the peak times.

Q. Isn't this an arbitrage for the energy market? A. Lots of entities will be able to take advantage of this storage facility.

Q. Suggested that benefit from wind came around 2014. If that's true to the extent if we do not fund and they wait another year, is this significant?

A. More opportunities with wind would curtail future coal plants being built.

Q. What is the efficiency ratio compared to coal? A. There are several different ways to look at this for every kilowatt hour to compress you get 1.25 out. Natural gas helps push wind back out. You only use 1/3 of gas to generate turbine.

Q. Other forms of energy would be used to compress the air? A. Yes, but wind energy could take over that process as technology allows.

Q. What's the energy source in Alabama? A. Coal fired plant.

Q. Why should Iowa do this? A. Iowa municipalities are known for trying new ideas and make them work.

Q. How much would it take to make this into a useful facility? A. \$250 million.

Q. The amount asked for seems to be a trivial amount compared to the cost of the facility cost. What is the gamble? A. This is a base-load unit. It can't replace a coal plant because it can't work 24/7, 365 days a year.

Q. Doesn't this reduce Iowa's need for coal use? A. Yes, by 260 megawatts-this is an intermediate option.

Y – Higby, Codel

Table – Crosbie, Hubbell, Barton

N –

Project Tabled

There is the recommendation that this proposal be Tabled.

1085-Consumers Energy, Sensible Energy Road Show Presentation

RECUSAL – Vern Gebhart

- Are still a cooperative
- Delivery and management energy company
- One of 13 owners for CIPCO
- Provide solutions to customer needs
- Remodeled old trucking company building using green methods
- 5% reduction in electric usage is achievable through market driven energy efficiency efforts by end user
- US energy boom no one know about but..
- ...It's the most invisible, least understood and is in danger of missing out of future investments
- Sensible Energy Road Show
- What can the average family do for energy efficiency efforts?
- This program looks at the alternatives to high cost implementations
- Working on the demand side of energy efficiency is part of the answer
- Mobil, hands on demonstration to offer tips on saving energy
- Come up with six sensible savers that would make up the road show

- Six are under \$10 and each can save \$50 average per year
- Have people fill out pledge card to emphasize commitment
- Estimated annual impact would save nearly \$250,000 in yearly energy costs

Questions

Q. Besides pledge cards, how will you measure road show impact? A. We will be tracking in other ways. The pledge card is only the beginning

Q. Why not go to the State Fair? A. Community celebrations catch a few thousand at a time.

Q. What's the incentive when you probably already have energy efficiency programs in place? A. We do have a full slate of energy efficiency programs but we're a small company and we want to create something that will have a greater impact in consumer's lives. Funding will help focus on the sensible energy part of this program.

Q. How will you reach students to help energy efficiency make an impact on their lives? A. We have contacted schools to promote program.

Q. Have you already built the trailer? A. Yes.

Q. So we're reimbursing that cost? A. Only a portion of the total cost.

Y – Higby, Hubbell

Table -

N – Barton, Codel, Crosbie

Project Denied

There is a recommendation that this proposal not go to the full board.

1097-Prairie Land Enterprises L.C., Switchgrass Presentation

- Holds up bundle of switchgrass, then shows small pieces after ground up (sends examples around table)
- Ground up again for finer product (sends examples around table)
- Then run the product into a pellet process to use (sends several examples around table)
- 1 acre of switchgrass replaces one barrel of oil
- This is being done in Canada in a large scale
- Can it be replicated? Yes it can.
- Smaller plants across southern Iowa instead of one large facility
- First chopping process in field isn't practical
- Sent pellets to stove manufacturers and they're responded well
- 40 lbs of pellet equals one cubic foot

Q. Using more land for corn is very popular. How do farmers feel about planting switchgrass? A. We have many commitments from farmers in southern Iowa.

Q. How does switchgrass handle in production and use? A. It is different than other products but it is very doable.

Q. What is the market? A. Farmers are very ready for a market.

Q. How will you know there's enough product? A. same process can be applied to any organic product until market is strong.

Q. Is there a new technology for this process? A. No, this process is very old

Q. Why would you need Power Fund money if it's not new? A. Because it's a new alternative product.

Q. What is your expected return on investment? A. Page 12 – the number is 100,000 a year. Listed under gross yearly sales.

Q. How many plants would grow from this project? A. 10-20 in southern Iowa where there is an abundance of grass.

Q. How much weight would you be hauling? A. A 1000 lbs per bale, 45 bales.

Q. How many gallons of ethanol will be used to haul grass to process? A. Don't have that number.

Q. Would you be able to make the product in a mobile form? A. Yes, but your window of opportunity is still dependent on the weather. You still will have storage costs.

Q. Know that pre-app exists for wood pelletizer. Is there any fundamental difference in the two products? A. Not in terms of equipment, exception for wood is dryers.

Y – Higby (Loan), Hubbell

Table –

N – Barton, Codel, Crosbie, Gebhart

Project Denied

There is the recommendation that this proposal not go to the full board.

1098-UNI, Creation of Novel Hydrogen Storage Materials for Fuel Cell Application Presentation

- Why Hydrogen?
- Portable energy storage, not source
- Flexible power generation
- Highest energy capacity
- Improved product, reduced pollution
- Very economical
- Problem with hydrogen is it's explosive
- Safety use has improved
- Hydrogen is a very dilute gas
- #1 problem is high capacity hydrogen storage
- Markets are in transportation, modular power generators, portable electronics
- Current products are metal hydrides
- Far superior to lithium ion Batteries
- Highly sensitive to contamination
- Limited refueling capability
- Our solution has a much higher volumetric density
- It's an inert compound
- Can operate near room temp

- Simple, established synthesis methods
- Uniquely original so no competition in literature
- Target markets 1st in high pressure storage tank enhancement
- Modular hydrogen power systems
- Backup power
- Industrial & agricultural machinery
- Public transportation
- Long term: electronics and automobiles

Questions

Q. Is it more cost effective? A. Yes, because you don't have the thermal regulation and contamination issues.

Pulled meeting into Closed Session (9.37 folder A)

Q. With the high pressure storage system, what would you be enhancing? A. Capacity, Hydrogen per unit volume. It would mean smaller tanks and lower pressure.

Q. Is this applied or basic research? A. This would be more along the lines of research and development over the span of 2-3 years.

Q. Why do you think no one is thinking about this? A. There's a lot of people looking into storage issues but why my side of research has stopped is assumed it's because of other competing technology.

Q. Can you summarize your sources of funding? A. Part of the renovations money came from three state sources (pg 24 of Full App).

Q. Who have you had dialog in this topic. A. One colleague in Illinois is doing most of the testing, one at UNI, one working on computer models.

Q. Why use undergrads instead of the best minds in the market? A. Funding-\$100,000 per expert instead of \$10/hr per student.

Q. So you're telling me that there is absolutely no patent or application for patent for this project? A. I have researched this and I have not found one with my method.

Discussion on IP/ Tech review through DDC process

Discussion regarding the committee reviewing the patent search information provided by UNI patent attorneys. ISU suggested this for their projects as it related to ISU patent searches and IP ownership.

Y – Codel, Crosbie, Higby, Hubbell

Table –

N – Barton, Gebhart

Strong recommendation for Tech/IP review for project to go on to PF Board

There is the recommendation that this proposal gets a technical and IP review for the full board.

1109-Novecta LLC, Utilizing Glycerol in Swine and Poultry Presentation

RECUSAL – Tom Barton

- Utilizing glycerol in biodiesel
- Produced all over US but Iowa highest producer
- Made from vegetable oil, animal fat
- Crude glycerol is a byproduct and put into feed
- Studied energy levels in animals that consumed feed
- Wondered what the other benefits could be
- 1. Quantify physical and chemical properties
- Want to survey 20 biodiesel plants
- 2. Want to find out the changes during storage
- 3. Feed dustiness and flowability during process
- 4. Pelleting process and quality
- Research partners:
 - Novecta
 - Kansas State University
 - ISU
 - DFS Animal Nutrition
 - Freedom Fuels

Questions

Q. Who is Novecta? A. A consulting company involved in the agriculture market

Q. Why are other companies not putting money in the project? A. Project of this type is hard to do without having school research done.

Q. This would be a public document? A. Could be used for other agriculture groups.

Q. Were you aware about the matching money criteria to get the application approval? A. We will have some in kind contribution through salaries. No cash money contributed at this time.

Q. What is the current price of glycerol? A. .25 cents per pound. Current cost of being shipped to Singapore to clean for pharmaceutical use. Worth more than corn grain for energy benefit. If it became pellet, can go higher than 5%.

Q. So you've already done feed tests? A. Three have already been published.

C. This research is limited because Kansas has the lab set up whereas ISU does not.

Q. Does # for KS mean for overhead? A. Yes.

Q. Wondering about cost share with KS? A. No direct cost share with KS

Q. How much will be produced? A. 10,000 tons when mandates become higher. Our product would mostly come from within the state.

Q. Why did you ask for a grant instead of a loan? A. No one will benefit other than the industry. Novecta will not benefit.

Barton recusal relieved to break tie.

Y - Higby, Hubbell, Barton - with conditions 1) funding out of state entities 2) matching funds, 3) PF being paid back

Table –

N – Codel, Gebhart

There is the recommendation that this proposal go to the full board with the following conditions: 1) funding out of state entities, 2) lack of matching funds and 3) Power Fund getting paid back by industry.

Review of Pre-Applications

1125-Mad Science of Iowa

- Education outreach
- Nothing listed in proposal about the learning objective
- Don't know how effective the approach would be
- Don't like "Mad" terminology
- Reservations regarding Power Fund even though experiments are interesting

Discussion

- C. We should be fighting the image of the "mad scientist", not promoting it.
- C. Master plan developed by other group. This group would use this program to develop their own program. Called Waterloo School District and they hadn't heard of them.
- C. Didn't see additional value from existing science fairs.
- C. Lack of linkage to existing programs wasn't appealing.

Vote

- Yes –
- Yes If –
- No But –
- No – Barton, Codel, Crosbie, Gebhart, Higby, Hubbell

1126-Improvement of starch Extraction to enhance Ethanol Processing

- No match – can't find value
- Gentleman is well credentialed.

Discussion

- C. Doesn't reveal what we'd be seeing
- C. Nothing at value-impossible to evaluate.
- C. Does ask to be considered for a loan.

Vote

- Yes –
- Yes If –
- No But – Codel
- No – Barton, Crosbie, Gebhart, Higby, Hubbell

1127-Water Powered Renewable Energy

- Proposal to design and test large paddle wheels. Want to anchor the paddle wheel to platforms in the Mississippi and Missouri Rivers.

- Not well thought out. Heart is in it but...

Discussion

(Higby brought visual aid: a model of the proposed project)

C. Need electric turbine for electricity to run in home.

C. Electric turbine was developed for lesser developed countries that don't have a lot of power.

Vote

Yes –

Yes If –

No But –

No – Barton, Codel, Crosbie, Gebhart, Higby, Hubbell

1128-Integrated Renewable Hydrogen production with Fuel Cell Powered Forklift Truck Fleet

- Headquarters are in Illinois but proposal is for the facility in Davenport
- Already active in hydrogen cell energy
- Want more money to develop forklift trucks
- Match is quite small for what is being asked for in funds

Discussion

C. Curious about supplier but cost too high

Vote

Yes –

Yes If –

No But – Codel, Higby

No – Barton, Crosbie, Gebhart, Hubbell

1129-Iowa Alliance for Wind Innovation and Novel Development (IAWIND)

- \$3 million dollar industry trade group
- More clarity or perhaps more information on formula focus on wind technology in Iowa
- Applied research support could draw into more of a partnership with the DOE
- Very proactive approach

Discussion

C. How do we position for new opportunities?

C. Response from DOE is that it should be a joint effort from all three regent universities.

C. DED would not have budget opportunities to fund.

C. Nothing to back up grand claims.

C. Ton of improvements to make cost competitive but next steps are unknown.

Vote

Yes –

Yes If –

No But – Barton, Codel, Gebhart, Higby, Hubbell with the condition that a four page summary be included and that the petitioners need to include information gathered from other companies.

No –

1130-Bio Energy Co-Products

- Meets match criteria and asking \$32,000
- Invented/formulated pellet to propose feed study with ISU

Discussion

C. No information about pellet so, no way to prove validity of project.

C. No supporting information from ISU authorities.

C. Too many uncertainties. Very unclear picture of project

C. Questionable to have a need before development.

Vote

RECUSAL - Barton

Yes –

Yes If –

No But – Crosbie, Higby, Hubbell

No – Codel, Gebhart

1131-Imagining Tomorrow: An Energy Independent Iowa

- Web based program to assist high school students to understand weather climate

Discussion

C. Issue of the organization being from Massachusetts.

Vote

RECUSAL - Higby

Yes –

Yes If –

No But –

No – Barton, Codel, Crosbie, Gebhart, Hubbell

1132-Campaign RePlant, ReNew: Millions of Trees, Billions of Benefits

- Trees Forever promotes energy efficiency
- Emerald ash boar taking significant percentage of Iowa trees
- \$1.7 million request for funds has \$169,000 to match
- Air quality would be measurable

Discussion

C. Good thing to do but what would be the benefit?

C. Cooling benefit is 30 years out.

- C. Reducing state's foot print can't be measured
 C. Should go to committee for community wide projects

Vote

RECUSAL – Gebhart

Yes

Yes If – Higby

No But –

No – Barton, Codel, Crosbie, Hubbell

1134-Biomass Renovation

- Want to install biomass gasifier furnace and dryer
- The equipment is for wood pellets/wood by-products

Discussion

- C. They have the furnace – they want to market the by-product
 C. Could you dry other things? Not limit to wood chips?
 C. Better candidate for DED.

Vote

Yes –

Yes If –

No But – Higby

No – Barton, Codel, Gebhart

1135-Technochem Biorefinery Campus

- Process technology – biodiesel in Keokuk, Boone served by rail
- Feedstock pre-treatment plant
- Money petitioned for Boone
- \$10 million to include whole campus
- \$2 million asked from Power Fund

Discussion

- C. Alludes to where money would go.
 C. Clean-up process.
 C. Would happen without Power Fund money.

Vote

Yes –

Yes If –

No But –

No – Barton, Codel, Gebhart, Higby

Review of Re-Application

1087-Sustainable City Solutions

- Unclear if for non-profit organization in original application

- Track how city of Fairfield government efforts and then create template website

Discussion

C. Websites for local governments to commission websites designed for small cities efficiency already exist. 1) Cool Cities website and 2)ICLEI which is an interactive site.

C. Actually, inter-activeness would be the different component

C. It would be a handy tool for city planners.

C. It's something we could find beneficial.

Vote

Yes -

Yes If – Barton, Codel, Higby

No But –

No – Gebhart

Other Business

Frank Codel asked for clarification on categorizing applications during negotiation stage of processing. Do we have an agreement of commitment when we start the negotiation process? Chairperson Stanley said that, yes, we do.

Pat Higby commented that the Iowa Energy Poll needs to move forward. Also, there was a request that the DDC members receive a copy of the Power Fund Board minutes in the packets they receive prior to DDC meetings.

Adjournment

There being no further business to discuss at this time, the meeting adjourned at 6:57pm. It was indicated that the next meeting would be June 25th, time of meeting TBD.

Respectfully Submitted,

Mary Lewis, Recorder